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“Management of land use systems for enhanced food security:
conflicts, controversies and resolutions”

Urbanfood^{plus} – African-German Partnership to Enhance Resource Use Efficiency in Urban and Peri-Urban Agriculture for Improved Food Security in West African Cities

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Abstract

Food security in West Africa not only depends on productivity increases in marginal rural areas, but also on enhanced use of intensively farmed agricultural “niche” lands such as the urban and peri-urban spaces. They are characterised by easy market access and input availability which allows self-reinforcing processes of agricultural intensification. However, too little is known about resource use efficiencies, matter flows and negative externalities in these systems. Starting from general assessments (*status quo* analyses), the African-German UrbanFood^{plus} (UFP) network develops and tests site-specific, farmer-tailored innovations. These directly address the above mentioned knowledge gaps in the four West African cities of Ouagadougou (Burkina Faso), Tamale (Ghana), Bamako (Mali), and Bamenda (Cameroon).

At all locations farmers attempt to cope with increasing land pressure by cultivating along electrical power lines, on public property, and on undeveloped private land. While a large proportion of the major food crops origin from the countryside, leafy vegetables and milk are mainly produced in the cities and peri-urban areas. Determined by water availability cultivation patterns strongly vary across the year. In Tamale staple crop production is vital in the rainy season while commercial vegetable production dominates during the

dry months. Livestock production systems are highly diverse in both cities while dairy and commercial pig farming predominates in Ouagadougou.

Urban agriculture is also characterised by high nutrient input rates through organic and inorganic fertilisers and reliance on irrigation. Biochar produced from corn cobs, rice husk, and saw dust was characterised and used for direct land application, filtering of irrigation water, and for co-composting. Biochar improved crop growth in both cities (up to 50%) and can be used as an effective filter material for waste water (2.5-3 log₁₀ units reduction in pathogens in a two stage system). A market model was established using secondary time series data (production and consumption) of the past 30 years. This will allow a site-specific economic evaluation of the impact of productivity enhancing technologies.

Keywords: Food security, irrigation, nutrient fluxes, soil fertility, urbanisation